of between 2 and 50 at a temperature T2 of the order of 40°C or higher and comprising between 5 g/100 ml and 20 g/100 ml of copolymers possessing:

- an average molecular mass of between 30 000 and 2 000 000 or a number of atoms along the main skeleton of between 1 000 and 60 000,

- a fraction by mass of segments with LCST of between 2% and 20%, and

- an average molecular mass of the segments with LCST of between 2 000 and 20 000 or an avarage number of atoms along a segment with LCST of between 35 and 350,

- to separate products of reaction of DNA sequence, DNA duplexes of less than 1 000 base pairs, denatured proteins or synthetic or natural polymers having a molecular mass of between 20 000 and 10 000 000 with a medium transiting from a viscosity V1 of between 100 and 10 000 $mPa.m^{-1}.s^{-1}$ at a temperature T1 of between 15 and 30°C to a viscosity V2 which is greater than V1 by a factor of between 2 and 100 at a temperature T2 higher than 40°C and comprising between 1 g/100 ml and 8 g/100 ml of copolymers possessing:

- an average molecular mass of between 500 000 and 5 000 000 or a number of atoms along the main skeleton of between 7 000 and 60 000,

- a fraction by mass of segments with LCST of between 2.5% and 15%, and

- an average molecular mass of segments with LCST of between 4 000 and 30 000 or an average number of

atoms along a segment with LCST of between 60 and 600 or

- to separate DNA duplexes having a size of between 500 bases and several millions of base pairs, or particles such as latexes, whole cells, whole chromosomes or organelles with a medium transiting from a viscosity V1 of between 100 and 10 000 $mPa.m^{-1}.s^{-1}$ at a temperature T1 of between 15 and 30°C to a viscosity V2 which is greater than V1 by a factor of between 2 and 100 at a temperature T2 of the order of 40°C or higher and comprising between 0.1 g/100 ml and 5 g/100 ml of copolymers possessing:

  - an average molecular mass greater than 500 000 or a number of atoms along the main skeleton greater than 7 000,

  - a fraction by mass of segments with LCST of between 2% and 15%, and

  - an average molecular mass of the segments with LCST greater than 4 000 or an average number of atoms along a segment with LCST greater than 90.

More preferably, these media comprise a set of copolymers chosen from:

- copolymers of the comb copolymer type whose skeleton is of the acrylamide, acryloylamino-ethanol or dimethylacrylamide type and on which side chains of the poly(N-isopropylacrylamide) type are grafted, and

- copolymers of the block copolymer type and which exhibit along their skeleton an alternation of blocks of the polyoxyethylene type and blocks of the polyoxypropylene type, or an alternation of

blocks of the polyoxyethylene type and of blocks of the polyoxybutylene type, or more generally an alternation of blocks of the soluble polyoxyalkylene type and of polyoxyalkylene blocks with LCST.

By way of illustration of the method of using the claimed separation medium there may be proposed in particular that comprising:

- selecting a separation medium according to the invention, according to the characteristics of the species to be separated;

- introducing this medium into a separating channel of an electrophoresis apparatus in a sufficient quantity to constitute its separation medium;

- placing a significant proportion of the channel at the temperature T2, either prior to or following the introduction of a sample;

- introducing a quantity of sample at the inlet of the separating channel;

- carrying out the separation at a temperature of the order of T2 in the thermostated portion of the channel; and

- detecting the migration of the analytes initially contained in the sample.

This detection involves conventional techniques which fall within the competence of persons skilled in the art and will not therefore be detailed in the present description.

It should be noted that the use of the claimed medium also covers variants in which the temperature is